



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

|   |             |                      |                       |                  |
|---|-------------|----------------------|-----------------------|------------------|
| APPLICATION NO.   | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.   | CONFIRMATION NO. |
| 10/829,179  | 04/22/2004  | Satoru Ohta          | Q81224                | 5944             |
| 65565 7590 02/07/2007<br>SUGHRUE-265550<br>2100 PENNSYLVANIA AVE. NW<br>WASHINGTON, DC 20037-3213 |             |                      | EXAMINER<br>VU, DAVID |                  |
|   |             |                      | ART UNIT              | PAPER NUMBER     |
|   |             |                      | 2818                  |                  |
| SHORTENED STATUTORY PERIOD OF RESPONSE  |             | MAIL DATE            | DELIVERY MODE         |                  |
| 3 MONTHS  |             | 02/07/2007           | PAPER                 |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/829,179

Applicant(s)

OHTA, SATORU

Examiner

DAVID VU

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 June 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 and 11 is/are pending in the application.
- 4a) Of the above claim(s) 1-5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 6-9 and 11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-9 and 11 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 6-9 and 11 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Kelley et al. (US Pat. 6,433,359, hereinafter Kelley) in view of Sirringhaus et al. (US Pat. 6,905,906, hereinafter Sirringhaus).

Regarding claims 6 and 8, Kelley discloses an organic transistor (fig. 1) comprising: a substrate 26; a gate electrode 12 on the substrate 26; a gate insulating layer 14/16 on the substrate 26 and the gate electrode 12; an organic semiconductor layer 18 on a surface of the gate insulating layer 14/16; a source electrode 22/24 on the organic semiconductor layer 18; and a drain electrode 22/24 on the organic semiconductor layer 18, wherein the surface of the gate insulating layer on which the organic semiconductor layer is formed has a large number of hydroxyl groups uniformly produced.

Kelley fails to disclose the gate insulating layer has a large number of hydroxyl groups. However, Sirringhaus teaches the surface of the gate insulating layer (PVP) has a large number of hydroxyl groups uniformly (col. 9, lines 17-21). It would have been obvious to one of

Art Unit: 2818

ordinary skill in the art at the time the invention was made to modify the invention of Kelley by forming the gate insulating layer as taught by Sirringhaus. As recognized by one skilled in the art, "PVP contains a high density of polar hydroxyl groups which tend to enhance the conductivity and diffusivity of ions through the film" (col. 10, lines 44-46).

Regarding claims 7 and 9, Kelley discloses a mobility of the organic semiconductor layer is  $0.5 \text{ cm}^2/\text{Vs}$  or more (TABLE 2, col. 12, lines 20-33).

Regarding the limitation "wherein the surface of the gate insulating layer is a surface-treated layer and the gate insulating layer is irradiated with ultraviolet rays in an ozone atmosphere before forming the surface-treated layer" (claims 6 and 8) and "wherein the surface-treated layer is formed by at least one compound selected from the group consisting of mono- or trichlorosilane compound having a functional group containing 8 or more carbon atoms....." (claim 11), such limitation does not further define the structure as instantly claimed, nor serve to distinguish over Kelley and Sirringhaus. Note that a "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether

Art Unit: 2818

claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above caselaw make clear.

### **Response to Arguments**

2. Applicant's arguments/declaration filed 11/13/06 have been fully considered but they are not persuasive.

3. Applicant argues that Sirringhaus " fails to disclose that the hydroxyl groups are uniformly produced on the surface". The term "uniformly" is a broad term and the limitation is not descriptive in what manner the hydroxyl groups are "uniformly". Thus the prior art meets this structural limitation simply by having more than one hydroxyl group, each of which is identical to the next and thus "uniformly," and especially since the prior art does not teach non-uniformity so uniformity is implied for the device to be effective in a useful manner.

4. Applicant argues that the limitation "wherein the surface of the gate insulating layer is a surface-treated layer and the gate insulating layer is irradiated with ultraviolet rays in an ozone atmosphere before forming the surface-treated layer" is not a product-by-process limitation but is rather "has unexpectedly superior properties". This argument is not persuasive as the resulting structure of the limitation is nothing more than a gate insulating layer formed by irradiated with ultraviolet rays in an ozone atmosphere. The limitation lacks any defined and distinct characteristics beyond the gate insulating layer taught by Kelley. The limitation " irradiated with ultraviolet rays in an ozone atmosphere" read in context with the remaining claim limitations and as evidenced by the specification, indicates clearly that the limitation is a product-by-process limitation because it describes the product by the process used to obtain it.

Alternatively, it is still not clear what product is claimed beyond a gate insulating layer. The limitation "irradiated with ultraviolet rays in an ozone atmosphere" itself adds nothing insofar as structure, nor does reading the limitation in context add structural weight. Not even does the impermissible importation of limitations from the specification into the claim assist in differentiating the structure. The declaration merely states that "the mobility of the organic transistor produced in accordance with the present invention was more than twice as high when the UV irradiation process was performed" (See Comparative Example). However, this explanation does not structurally distinguish over that taught by the combination of Siringhaus and Kelley.

### ***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2818

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Vu whose telephone number is (571) 272-1798. The examiner can normally be reached on Monday-Friday from 8:00am to 5:00pm. If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith S can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR, Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



DAVID VU  
PRIMARY EXAMINER